



Application for Works Approval

Part V Division 3 of the *Environmental Protection Act 1986*

Works Approval Number W6825/2023/1

Applicant IGO Cosmos Pty Ltd

ACN 111 599 323

File number DER2023/000444

Premises Cosmos Wastewater Treatment Plant
Mining Tenement M36/371
SIR SAMUEL WA 6437

As defined by the premises map attached to the issued works approval

Date of report 17 October 2023

Decision Works approval granted

**A/SENIOR ENVIRONMENTAL OFFICER
INDUSTRY REGULATION
REGULATORY SERVICES**

An officer delegated under section 20 of the Environmental Protection Act 1986 (WA)

Table of Contents

1. Decision summary	3
2. Scope of assessment	3
2.1 Regulatory framework	3
2.2 Application summary and overview of premises	3
3. Risk assessment	3
3.1 Source-pathways and receptors	4
3.1.1 Emissions and controls	4
3.1.2 Receptors	5
3.2 Risk ratings	6
3.3 Assessment of wastewater discharge to land	9
3.3.1 Irrigation spray-field sizing	9
3.3.2 Wastewater quality	9
3.3.3 Nutrient loading assessment	10
4. Consultation	10
5. Decision	11
References	12
Appendix 1: Summary of applicant’s comments on risk assessment and draft conditions	13
Appendix 2: Application validation summary	14
Table 1: Proposed applicant controls	4
Table 2: Sensitive human and environmental receptors and distance from prescribed activity	5
Table 3: Risk assessment of potential emissions and discharges from the premises during construction, commissioning and time-limited operations	7
Table 4: Proposed wastewater quality to be discharged to the irrigation spray-field and for reuse	9
Table 5: Consultation	10

1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of the premises. As a result of this assessment, Works Approval W6825/2023/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) has considered and given due regard to its regulatory framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

2.2 Application summary and overview of premises

On 4 July 2023, the applicant submitted an application for a works approval to the department under section 54 of the *Environmental Protection Act 1986* (EP Act). The application seeks to construct a membrane bioreactor (MBR) wastewater treatment plant (WWTP) to support the Cosmos accommodation camp growth during the peak phase of project construction. The prescribed premises is located approximately 40 km north of Leinster.

The proposed WWTP has a design capacity to treat 113 m³ per day of wastewater generated by the camp. The premises currently operates a modified Ludzack-Ettinger (MLE) WWTP licensed under Category 85 (L7404/1999/9) with a design capacity of 90 m³ per day. The premises has two existing wastewater irrigation spray fields; irrigation spray field 1 sized at 1.55 ha and irrigation spray field 2 sized at 2 ha. This application seeks to extend irrigation spray field 1 by 1.65 ha, to give a total of 5.2 ha across both irrigation areas. In addition, the applicant intends to utilise treated wastewater for dust suppression and mineral processing (plant process water) in accordance with the requirements of the Department of Health (DoH) *Guidelines for the Non-potable Uses of Recycled Water in Western Australia* (DoH 2011).

The average daily throughput of the facility (550 rooms at 80% occupancy at any one time) is expected to be approximately 110 m³/day (440 persons at 250 L/person/day). The application includes a staged installation (~3 weeks) and commissioning to cover biological stabilisation (~20 weeks). The applicant will then apply for a licence amendment to include the WWTP on their existing licence (L7404/1999/9).

The existing MLE WWTP system will function as necessary, providing peak load support during the construction phase and during the new MBR WWTP scheduled shutdowns.

The premises relates to the category and assessed design capacity under Schedule 1 of the Environmental Protection Regulations 1987 (EP Regulations) which are defined in Works Approval W6825/2023/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with *Guideline: Risk Assessments* (DWER 2020) are outlined in Works Approval W6825/2023/1.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk Assessments* (DWER 2020b).

To establish a risk event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction, commissioning and operation which have been considered in this decision report are detailed in Table 1 below. Table 1 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 1: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction and installation			
Dust	Earthworks and vehicle movements	Air / windborne pathway	<ul style="list-style-type: none"> • MBR plant is containerised with minimal siteworks required. • A complaints register will be maintained.
Noise		Air / windborne pathway	<ul style="list-style-type: none"> • Site works to be completed during daylight hours only. • A complaints register will be maintained.
Commissioning			
Inadequately treated wastewater	Not fully operational or optimised WWTP treatment processes	Seepage to soil and groundwater	<ul style="list-style-type: none"> • Conduct original equipment manufacturer prescribed performance tests and operational checks to ensure that all treatment processes are operational and optimised before discharging wastewater. • Undertake inspections to identify any operational gaps or inefficiencies during the commissioning phase. • Testing and inspection of monitoring and control systems will be conducted by OEM specialists to ensure their proper functionality.
Operation			
Noise	Operation of WWTP	Air / windborne pathway	<ul style="list-style-type: none"> • Regular inspection and maintenance of plant and equipment. • Maintain the complaints register.
Odour			
Spills/unintended releases of hydrocarbons or chemicals	Chemical handling and storage	Seepage to soil and groundwater	<ul style="list-style-type: none"> • Chemical handling and safe storage training for staff
Spills/unintended releases of partially treated wastewater or solid waste	Containment loss from WWTP and associated pipelines	Seepage to soil and groundwater	<ul style="list-style-type: none"> • A certified waste carrier will be used for sludge disposal. • Implementation of a sludge management procedure detailing handling, treatment and disposal practices.
Discharge of treated wastewater for dust suppression and mineral processing	Treated wastewater discharge	Seepage to soil and groundwater	<ul style="list-style-type: none"> • Regular monitoring and reporting of wastewater quality parameters to ensure it meets the specified wastewater quality. • Implementation of a DoH approved Recycled Water Quality Management Plan to ensure only compliant wastewater is used for dust suppression.
Discharge of treated wastewater to the existing irrigation spray field	Treated wastewater discharge	Seepage to soil and groundwater	<ul style="list-style-type: none"> • Fenced area with signage advising the area is not suitable for human contact. • Regular inspections of fencing and signage.

3.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020b), the Delegated Officer has excluded the applicant's employees, visitors, and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies, and is provided for under other state legislation.

Table 2 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guideline: Environmental Siting* (DWER 2020a)).

Table 2: Sensitive human and environmental receptors and distance from prescribed activity

Receptors	Distance from prescribed activity
Human receptors	
<p>Aboriginal and heritage sites:</p> <ol style="list-style-type: none"> 1. Kathleen Valley- SS4 (Artefacts/scatter), ID: 22,371 2. Kathleen Valley- SS3 (Artefacts/scatter), ID: 22,370 3. Violet Range2 (Mythological, Natural Feature), ID: 22,277 4. PELTJAPA (Ceremonial, Mythological), ID: 825 5. Williams Well (Camp, water source), ID: 22,280 	<ol style="list-style-type: none"> 1. 150 m east of the proposed activity, within mining tenement 2. 600 m north-east of the proposed activity, within mining tenement 3. 500 m west of the proposed activity, within mining tenement 4. 1 km north of the proposed activity, within mining tenement 5. 1.8 km south-east of the proposed activity, within mining tenement
Yakabindie Pastoral Station	Overlaps the premises
Ngumbu Pastoral Pty Ltd	Overlaps the premises
Environmental receptors	
Minor non-perennial watercourses	<p>100 m west and 550 m east of the prescribed activity.</p> <p>The premises is located within the Lake Carey sub-catchment of the Western Plateau Salt Lake hydrographic basin. Numerous minor watercourses flow towards Lake Miranda [5 km south of the irrigation area], but they are ephemeral and only carry water during significant rainfall events like thunderstorms or cyclonic activity (IGO 2023a).</p>
Groundwater	<p>Brackish water is widely distributed throughout the Northern Goldfields with increasing salinities downstream towards the main drainages. Fresh groundwater can occur in the upper parts of the palaeochannel tributaries and is indicative of modern recharge (IGO 2023a).</p> <p>Groundwater systems are maintained by rainfall recharge with most occurring during heavy rainfall and augmented from surface run-off and local flooding. Groundwater discharge occurs mostly through evaporation from playa lakes e.g. Lake Miranda (IGO 2023a).</p> <p>The licence holder's most recent Annual Environmental Report has indicated groundwater levels at monitoring bores 9 and 14 (closest to the irrigation spray fields) to range between 8-10 mbgl.</p> <p>Groundwater salinity is mapped at 1000-3000 mg/L TDS.</p>

Receptors	Distance from prescribed activity
<p>Priority Ecological Community (PEC): Violet Range (Perseverance Greenstone Belt) vegetation assemblages (banded ironstone formation), Priority 1</p>	<p>Buffer zone extends into the mining tenement.</p> <p>PEK (2017) identified that the four vegetation communities comprising this PEC are unlikely to be found within the wider Cosmos mine area, as the survey area is located on colluvial sheet wash plains, sheet wash deposits and alluvial floodplains and is situated to the east of the Violet Range. In addition, no areas of banded ironstone formation have been mapped within the Project area (IGO 2023a).</p>
<p>Priority flora: <i>Grevillea inconspicua</i> (Cue Grevillea) P4</p>	<p>Approximately 4km from the proposed activity.</p>
<p>Priority fauna:</p> <ol style="list-style-type: none"> 1. <i>Leipoa ocellata</i> – Malleefowl (threatened, possible occurrence) 2. <i>Merops ornatus</i> - Rainbow bee-eater (possible occurrence) 3. <i>Kwonkan moriartii</i> – Trapdoor spider (P2, unlikely occurrence) 	<p>No conservation significant fauna or habitat types have been recorded during terrestrial fauna surveys. Desktop analysis lists several species that may occur within the regional area (IGO 2023a).</p>

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020b) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

Works Approval W6825/2023/1 that accompanies this decision report authorises construction, commissioning and time-limited operations. The conditions in the issued works approval, as outlined in Table 3 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence amendment is required following the time-limited operational phase authorised under the works approval to authorise use of the infrastructure and emissions associated with the ongoing operation of the premises. A risk assessment for the operational phase has been included in this decision report, however licence conditions will not be finalised until the department assesses the licence application.

Table 3: Risk assessment of potential emissions and discharges from the premises during construction, commissioning and time-limited operations

Risk Event				Consequence rating ¹	Likelihood rating ¹	Risk ¹	Reasoning	Works approval regulatory controls
Source/ Activities	Potential emissions	Potential receptors, pathway and impact	Applicant controls					
Construction and installation								
Vehicle movements Earthworks for the installation of the WWTP, infrastructure, equipment, bunding	Noise and fugitive dust	Unreasonable interference with the health, welfare, convenience, comfort or amenity of nearby human sensitive receptors	Refer to Table 1	Minimal onsite impact Slight	Not likely to occur in most circumstances Unlikely	Low Acceptable, based on applicant controls being implemented	The Delegated Officer considers there is sufficient separation in place to the nearest permanent settlement (~38 km – Leinster) with other human receptors identified in Table 2 only occasionally inhabited. Also considering the MBR plant is containerised with minimal onsite construction works required, it is not reasonably foreseen that noise and dust from construction and installation works will impact on the amenity or health of off-site human receptors.	No regulatory controls specified in works approval - applicant controls sufficient.
Installation of extended irrigation spray field pipework and sprinklers	Spills/ unintended releases of hydrocarbons or chemicals	Seepage/ infiltration causing soil and groundwater contamination		Low-level onsite impacts Minimal offsite impacts Minor	May only occur in exceptional circumstances Rare	Low Acceptable, based on applicant controls being implemented	The Delegated Officer considers the applicant's controls in addition to a standard chemical storage construction requirement are necessary in mitigating the consequence and likelihood of pollution or environmental harm.	- Condition 1, Table 1: 1a(viii), 1a(ix), 1a(x), 1i
Commissioning and time-limited operations								
Vehicle movements Commissioning of the WWTP Operation of the WWTP	Noise	Unreasonable interference with the health, welfare, convenience, comfort or amenity of nearby sensitive receptors	Refer to Table 1	Minimal onsite impact Slight	Not likely to occur in most circumstances Unlikely	Low Acceptable, based on applicant controls being implemented	The Delegated Officer considers there is sufficient separation in place to the nearest permanent settlement (~38 km – Leinster) with other human receptors identified in Table 2 only occasionally inhabited. Therefore, it is not reasonably foreseen that noise from commissioning and time-limited operations will impact on the amenity or health of off-site human receptors.	No regulatory controls specified in works approval - applicant controls sufficient.
	Odour			Low-level onsite impacts Minimal offsite impacts Minor	Not likely to occur in most circumstances Unlikely	Medium Acceptable, based on applicant controls being implemented	The Delegated Officer considers the applicant's controls sufficient in preventing and managing any odours during commissioning and time-limited operations. Applicable applicant controls have been included in the works approval.	- Condition 1, Table 1: 1a(i), 1a(vii) - Condition 5, Table 2: 2b, 2c - Condition 13, Table 5: 3b, 3c
	Spills/ unintended releases of hydrocarbons, chemicals, solid waste or partially treated wastewater	Seepage/ infiltration causing soil and groundwater contamination		Low-level onsite impacts Minimal offsite impacts Minor	Not likely to occur in most circumstances Unlikely	Medium Acceptable, subject to applicant controls and additional regulatory controls being implemented	The Delegated Officer considers the applicant's controls in addition to standard chemical storage in accordance with relevant Australian Standards, are necessary in mitigating the consequence and likelihood of pollution or environmental harm during commissioning and time-limited operations.	- Condition 1, Table 1: 1a(viii), 1a(ix), 1a(x), 1e, 1f, 1g, 1h, 1i - Condition 5, Table 2: 2d - Condition 13, Table 5: 3d, 4a, 4b
Discharge to the irrigation spray-fields	Treated wastewater	Unreasonable interference with the health, welfare, convenience, comfort or amenity of nearby human sensitive receptors Seepage/ infiltration causing soil and groundwater contamination		Mid-level on-site impacts Low-level off-site impacts on local scale Moderate	The risk event could occur at some time Possible	Medium Acceptable, subject to applicant controls and additional regulatory controls being implemented	Refer to Section 3.3 for assessment of wastewater discharge to land.	- Condition 1, Table 1: 1c, 1d, 2a, 2b, 2c , 2d, 2e, 2f - Condition 5, Table 2: 1a, 1b, 1c, 1d, 1e, 1f, 2a - Condition 6, Table 3 - Condition 7, Table 4 - Condition 13, Table 5: 1a, 1b, 1c, 1d, 1e, 1f, 1g, 3a - Condition 14, Table 6 - Condition 15, Table 7 - Condition 16, Table 8

Risk Event				Consequence rating ¹	Likelihood rating ¹	Risk ¹	Reasoning	Works approval regulatory controls
Source/ Activities	Potential emissions	Potential receptors, pathway and impact	Applicant controls					
Discharge to roads and construction activities for dust suppression purposes and use in mineral processing activities	Treated wastewater	Unreasonable interference with the health, welfare, convenience, comfort or amenity of nearby sensitive receptors Seepage/ infiltration causing soil and groundwater contamination	Refer to Table 1	Mid-level on-site impacts Low-level off-site impacts on local scale Moderate	The risk event could occur at some time Possible	Medium Acceptable, subject to applicant controls and additional regulatory controls being implemented	The Delegated Officer considers the reuse of treated wastewater for dust suppression and mineral processing activities, in accordance with the DoH Guidelines, to be acceptable providing the necessary approvals are granted by the DoH.	- Condition 13, Table 5: 2a, 2b - Condition 14, Table 6 - Condition 15, Table 7 - Condition 16, Table 8

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk Assessments* (DWER 2020).

Note 2: Proposed applicant controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

3.3 Assessment of wastewater discharge to land

3.3.1 Irrigation spray-field sizing

The applicant intends to discharge treated wastewater to designated irrigation spray-fields 1 and 2. The existing spray-field infrastructure currently covers 3.55 ha and the applicant is seeking to construct an additional 1.65 ha of sprinkler units at spray-field 1, increasing its size to 3.2 ha. The size of spray-field 2 will remain at 2 ha, resulting in the total irrigation area at the premises increasing to 5.2 ha. Based on the assessed soil properties in line with the requirements of AS 1547, the applicant has calculated an irrigation rate of 0.0035 mm/day. To minimise the likelihood of pooling across the irrigation spray-field, the Delegated Officer has determined a maximum MBR WWTP design capacity of 113 m³/day is permitted to be discharged to both irrigation spray fields during time-limited operations at no more than this irrigation rate.

During and following heavy rain, there is the potential for this treated wastewater to pool on the ground surface. Pooling of wastewater may lead to dispersion off-site via overland flow or infiltration and migration in groundwater. The Delegated Officer considers this pooling would cause low level off-site impacts and minimal impacts at a wider scale, due to the dilution effect from rainfall and the conditions relating to irrigation operations added to the works approval as per the applicant's proposed controls.

3.3.2 Wastewater quality

The applicant proposes to discharge a maximum of 110 m³/day of treated wastewater to the irrigation spray-fields. Pending approvals from the DoH, the applicant intends to use a portion of this treated wastewater quantity for dust suppression and in mineral processing, thus minimising the need for irrigation. Based on the design of the MBR WWTP, the applicant expects the treated wastewater to meet concentrations for the parameters listed in Table 4, prior to discharge to the irrigation spray-fields.

Table 4: Proposed wastewater quality to be discharged to the irrigation spray-field and for reuse

Parameter	Expected concentration for irrigation spray field discharge	Expected concentration for reuse (dust suppression and mineral processing water)
<i>Escherichia coli</i>	<1000 cfu/100mL	<10 cfu/100ml
5-day biochemical oxygen demand (BOD ₅)	<20 mg/L	
pH	6.5 - 8.5	
Total suspended solids (TSS)	<30 mg/L	
Total nitrogen (TN)	<20 mg/L*	
Total phosphorous (TP)	<4 mg/L*	
Residual free chlorine	0.2 – 2.0 mg/L	
Sodium ions (Na ⁺)	6.9 mg/L**	
Calcium ions (Ca ²⁺)	8.4 mg/L**	
Magnesium ions (Mg ²⁺)	<0.5 mg/L**	
Electrical conductivity at 25°C	61 µs/cm**	

* Analysed over an annual period to assess nutrient loading potential.

** Applicant's analysis of drinking water used at the site. Applicant does not expect these parameters to undergo significant alteration through utilisation and WWTP processes.

3.3.3 Nutrient loading assessment

In accordance with the Cosmos Nickel Sprayfield Irrigation Soils Study (Soilwater Group 2019), it has been determined that the soil in the irrigation spray-field and expected end use of this area will allow for:

- Appropriate nutrient uptake in accordance with risk category D described in Table 1 - Eutrophication risk based on soil type and location, *Water Quality Protection Note 22 – Irrigation with nutrient-rich wastewater* (WQPN 22). Although the irrigation soil studies completed indicates an average phosphorus buffering index <100 (risk category B), the soil study notes the presence of hydrous Fe and Al oxides (reactive Fe and Al) are capable of sorbing soluble P and rendering it largely immobile.
- A medium-risk exposure category level in line with Table 7 – Commissioning validation and verification monitoring requirements and Table 8 – Minimum ongoing monitoring requirements, *Guidelines for the Non-potable Uses of Recycled Water in Western Australia* (DoH 2011);
- A stable soil structure after conducting a soil sodicity assessment using the treated wastewater expected sodium adsorption ratio against electrical conductivity in accordance with the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 3, Primary Industries – Rationale and Background Information*.

Considering the applicant’s proposed controls in ensuring the hydraulic and nutrient loading on the receiving environment is managed appropriately in accordance with the above, the Delegated Officer has determined the overall rating for the risk of treated wastewater discharge and soil sodicity is **Medium**.

4. Consultation

Table 5 provides a summary of the consultation undertaken by the department.

Table 5: Consultation

Consultation method	Comments received	Department response
Application advertised on the department’s website on 31/07/2023 – 22/08/2023	None received.	N/A
Shire of Leonora advised of proposal on 01/08/2023	None received.	N/A
Department of Health (DoH) advised of proposal on 01/08/2023	DoH responded on 17/08/2023 advising that they have received both an application for the sewage treatment system and a recycled quality management plan which are currently under assessment.	The Delegated Officer notes that the works approval holder will only be permitted to reuse treated wastewater subject to DoH granting the necessary approvals and conditions set in W6825/2023/1.
Department of Planning, Lands and Heritage (DPLH) advised on 01/08/2023	None received.	N/A
Tijwarl (Aboriginal Corporation) RNTBC	None received.	N/A

Consultation method	Comments received	Department response
Ngumbu Pastoral Pty Ltd advised of proposal on 01/08/2023	None received.	N/A
BHP Billiton Yakabindie Nickel Pty Ltd advised of proposal on 01/08/2023	None received.	N/A
Applicant was provided with draft documents on 02/10/2023	The applicant provided comments on 13/10/2023. Refer to Appendix 1.	Refer to Appendix 1.

5. Decision

The Delegated Officer has determined the new WWTP and extension of the existing irrigation spray field, with an assessed discharge maximum of 113 m³ per day, does not pose an unacceptable risk of impacts to on and off-site receptors. This determination is based on the following:

- sufficient separation to nearby (human) sensitive receptors, groundwater and surface water features;
- calculation of the hydraulic and nutrient loading of the expected wastewater quantity and quality to the receiving environment; and
- the applicant's proposed controls for the construction, commissioning and operation of the wastewater treatment plant.

Accordingly, the Delegated Officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

The controls proposed by the applicant are considered critical for maintaining an acceptable level of risk of environmental impacts; as such, they will be imposed where required on the works approval as infrastructure controls.

References

1. Department of Environmental Regulation (DER), July 2015. *Guidance Statement: Regulatory principles*. Perth, Western Australia. Accessed at: www.wa.gov.au
2. DER, October 2015. *Guidance Statement: Setting conditions*. Perth, Western Australia. Accessed at: www.wa.gov.au
3. Department of Health (DoH), 2011. *Guidelines for the Non-potable Uses of Recycled Water in Western Australia*. Perth, Western Australia. Accessed at: www.health.wa.gov.au
4. Department of Water (DOW), July 2008. *Water Quality Protection Note 22 (WQPN22): Irrigation with nutrient rich wastewater*. Perth, Western Australia. Accessed at: www.wa.gov.au
5. Department of Water and Environmental Regulation (DWER), June 2019. *Guideline: Decision Making*. Perth, Western Australia. Accessed at www.wa.gov.au
6. DWER, June 2019. *Guideline: Industry Regulation Guide to Licensing*. Perth, Western Australia. Accessed at www.wa.gov.au
7. DWER December 2020a, *Guideline: Environmental Siting*, Perth, Western Australia. Accessed at: www.wa.gov.au
8. DWER December 2020b, *Guideline: Risk Assessments*, Perth, Western Australia. Accessed at: www.wa.gov.au
9. IGO Cosmos Pty Ltd (IGO) 2023a, *Environmental Application Cosmos Wastewater Treatment Plant Upgrade*, Western Australia. DWER Reference: A2187030
10. IGO 2023b, *Response to Request for Information*, Western Australia. DWER reference: DWERDT832917
11. Queensland Department of Environment and Science (QLD), June 2020. *Disposal of effluent using irrigation*. Perth, Western Australia. Accessed at: www.publications.qld.gov.au
12. Soilwater Group, March 2019. *Cosmos Nickel Sprayfield Irrigation Soils Study*. Perth, Western Australia. DWER reference: A2190979

Appendix 1: Summary of applicant's comments on risk assessment and draft conditions

Condition	Summary of applicant's comment	Department's response
<p>Condition 5, Table 2, 1b and Condition 13, Table 5, 1b (Irrigation must be via low drift fan-spray nozzles spaced for even distribution)</p>	<p>IGO currently utilises impact type irrigation heads because they offer several compelling advantages. Impact heads can efficiently cover larger areas, reducing the number of heads required and minimising energy and maintenance costs. They are less prone to drift, ensuring more uniform wastewater distribution, reducing clogging risks, and adapting better to varying terrains. Furthermore, the use of impact heads can contribute to better treatment outcomes, aligning with regulatory compliance and environmental stewardship objectives.</p> <p>Therefore, considering the potential for improved efficiency, reduced drift risk, and cost savings, IGO propose to utilise impact type irrigation heads as a viable and effective alternative for wastewater spray field applications.</p>	<p>The Department considers this change acceptable and has updated the works approval accordingly to reference impact type sprinkler heads.</p>
<p>Table 6 (DWER's requested information on the mineral processing plant)</p>	<p>The treated wastewater reuse process involves a dedicated pipeline that transports treated wastewater back into the processing plant, integrating it into the closed processing circuit. This approach will be employed primarily during wet periods following rainfall events, particularly when dust suppression is unnecessary or when the spray fields are saturated due to received rainfall. This strategy not only ensures the efficient use of treated wastewater but also aligns with responsible environmental practices.</p>	<p>The works approval has been updated to include the location of the mineral processing plant.</p>

Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)					
Application type					
Works approval	<input checked="" type="checkbox"/>				
Licence	<input type="checkbox"/>	Relevant works approval number:		None <input type="checkbox"/>	
		Has the works approval been complied with?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		Has time limited operations under the works approval demonstrated acceptable operations?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
		Environmental Compliance Report / Critical Containment Infrastructure Report submitted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
		Date report received:			
Renewal	<input type="checkbox"/>	Current licence number:			
Amendment to works approval	<input type="checkbox"/>	Current works approval number:			
Amendment to licence	<input type="checkbox"/>	Current licence number:			
		Relevant works approval number:		N/A <input type="checkbox"/>	
Registration	<input type="checkbox"/>	Current works approval number:		None <input type="checkbox"/>	
Date application received	4 July 2023				
Applicant and premises details					
Applicant name/s (full legal name/s)	IGO Cosmos Pty Ltd				
Premises name	Cosmos Wastewater Treatment Plant				
Premises location	Mining Tenement M36/371				
Local Government Authority	Shire of Leonora				
Application documents					
HPCM file reference number:	DER2023/000444				
Key application documents (additional to application form):	<ul style="list-style-type: none"> Appendix 3 Cosmos MBR WWTP Process Brief Appendix 4 Spray Irrigation Soil Study Assessment Report Environmental Application Cosmos Wastewater Treatment Plant Upgrade Cover Letter 				
Scope of application/assessment					
Summary of proposed activities or changes to existing operations.	<p>Works approval – Category 54</p> <p>Construction of a Membrane Bioreactor (MBR) wastewater treatment plant to support the Cosmos accommodation camp (550 rooms capacity) growth during the peak phase of project construction.</p> <p>Proposal to utilise suitably treated wastewater for beneficial uses, such as dust suppression, and/or industrial process water.</p> <p>Average daily throughput of the facility is expected to be approximately 110m³/day (440 persons (80% of rooms available at any one time), 250L/pp/day). Maximum design capacity of the MBR is indicated at 113m³/day</p> <p>The schedule of works indicates installation of the WWTP to take ~3 weeks and commissioning to take ~20 weeks. A subsequent licence amendment will be submitted during this time.</p> <p>The applicant has determined the location of the WWTP to be adjacent to the existing irrigation spray field 1.</p>				

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)

Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Proposed production or design capacity
Category 54 Sewage facility: premises — (a) on which sewage is treated (excluding septic tanks); or (b) from which treated sewage is discharged onto land or into waters	<u>Existing (Licence L7404/1999/9)</u> 90 cubic meters per day <u>Proposed:</u> 113 cubic meters per day

Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: N/A Managed under Part V <input checked="" type="checkbox"/> Assessed under Part IV <input type="checkbox"/>
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Ministerial statement No: N/A EPA Report No: N/A
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Reference No: N/A
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Certificate of title <input type="checkbox"/> General lease <input type="checkbox"/> Expiry: Mining lease / tenement M36/371 <input checked="" type="checkbox"/> Expiry: 03 March 2041 Other evidence <input type="checkbox"/> Expiry: Minedex states the tenement is held by AUSTRALIAN NICKEL INVESTMENTS PTY LTD - which is a wholly owned subsidiary of IGO
Has the applicant obtained all relevant planning approvals?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	Approval: Expiry date: If N/A explain why? Premises is part of mining tenement – exempt from planning approval under the Mining Act 1978.
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	CPS No: N/A No clearing is proposed.
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Application reference No: N/A Licence/permit No: N/A No clearing is proposed.

SECTION 1: APPLICATION SUMMARY (as updated from validation checklist)

<p>Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p>Application reference No: Licence/permit No: GWL 63896</p>
<p>Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p>Name: Goldfields Groundwater Area Type: Proclaimed Groundwater Area Has Regulatory Services (Water) been consulted? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/> Regional office: Goldfields</p>
<p>Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	<p>Name: N/A Priority: P1 / P2 / P3 / <u>N/A</u> Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/></p>
<p>Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004</i>, <i>Environmental Protection (Controlled Waste) Regulations 2004</i>, <i>State Agreement Act xxxx</i>)</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p><i>Rights in Water and Irrigation Act 1914</i> <i>Mining Act 1978</i> <i>Health (Miscellaneous Provisions) Act 1911</i></p>
<p>Is the Premises within an Environmental Protection Policy (EPP) Area?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Is the Premises subject to any EPP requirements?</p>	<p>Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p>	
<p>Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i>?</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	<p>CSS site ID: 82,210 Classification: possibly contaminated – investigation required (PC-IR) Date of classification: 20/07/2011</p>